

REMARKS

By the present amendment/reply, no claims have been cancelled, amended or added. Accordingly, claims 55-131 are presently pending, of which claims 55, 115 and 116 are the independent claims. Rejoinder of claims 76-114 and 117-131, which presently stand withdrawn from consideration, is respectfully requested pursuant to 37 C.F.R. § 1.141, as discussed in greater detail below. Accordingly, favorable reconsideration and allowance of claims 55-131 is respectfully requested.

Applicants wish to thank the Examiner for the careful review of the present application and of the prior art.

Applicants also wish to thank the Examiner for having withdrawn the previous grounds of rejection under 35 U.S.C. §§ 102 and 103.

Election / Restrictions

This item is discussed below, following a discussion of 35 U.S.C. § 103.

35 U.S.C. § 103(a): claims 55-63, 66, 69, 70, 75, 115 and 116

The Examiner has rejected claims 55-63, 66, 69, 70, 75, 115 and 116 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,027,185 to Nodwell et al. ("Nodwell") in view of U.S. Patent Application Publication No. US 2002/0024290 to Uemura et al. ("Uemura").

Applicants respectfully note in passing that the Nodwell reference shares overlapping inventorship with the present application.

Applicants respectfully submit that the Nodwell and Uemura references fail to satisfy the requirements for a *prima facie* case of obviousness of independent claim 55. In this regard, the requirements for a *prima facie* case of

obviousness have been well established by the Court of Appeals for the Federal Circuit, and are concisely summarized in M.P.E.P. § 2142 and 2143, which confirm that three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The first of these requirements, the suggestion or motivation requirement, has recently been reformulated by the United States Supreme Court as requiring an "apparent reason", as discussed in greater detail below.

Applicants respectfully submit that the Nodwell and Uemura references fail to satisfy at least the first and the third of the above-noted requirements for a *prima facie* case of obviousness.

A) Nodwell and Uemura Fail to Teach or Suggest All the Claim Limitations

With respect to the third of the above-noted requirements for a *prima facie* case of obviousness, independent claim 55 recites:

55. An apparatus for producing electromagnetic radiation, the apparatus comprising:
 - a) an electrically insulated flow generator configured to generate a flow of liquid along an inside surface of an envelope; and

- b) first and second electrodes configured to generate an electrical arc within the envelope to produce the electromagnetic radiation.

Applicants respectfully submit that Nodwell and Uemura both fail to disclose or suggest, “an electrically insulated flow generator configured to generate a flow of liquid along an inside surface of an envelope”, as recited in independent claim 55. Advantages of this aspect of claim 55 are discussed throughout Applicants’ specification (see e.g. paras. [0027] and [0061]). These advantages include, among other advantages, an ability to reduce the minimum spacing between adjacent lamps in a multi-lamp system.

The Nodwell reference was discussed in detail in Applicants’ previous reply.

In the present Office Action, the Examiner has agreed that Nodwell fails to disclose, “an electrically insulated flow generator configured to generate a flow of liquid along an inside surface of an envelope”, as recited in claim 55.

However, the Examiner has expressed the initial view that, “Uemura discloses an apparatus (figure 1) in an analogous art having cathode (4), anode (6), and a flow generator (8) which is electrically insulated (paragraph 40), for the purpose of enhancing reliability” The Examiner has expressed the initial view that it would have been obvious to include an electrically insulated flow generator as disclosed by Uemura in the apparatus disclosed by Nodwell, for the purpose of enhancing reliability of the apparatus.

Uemura discloses a vacuum fluorescent display. In the first embodiment shown in Figure 1, the inner space of an envelope 1 is maintained at vacuum. A voltage is applied across a cathode electrode 4 and a grid electrode 5, causing electrons to be emitted. A high voltage, higher than the potential of the grid electrode 5, is applied to an anode electrode 6, thereby accelerating the emitted electrons and causing them to bombard against a phosphor screen 2. Phosphors in the phosphor screen 2 are excited by the electron

impacts, and the phosphor screen 2 emits light in a color corresponding to the excited phosphor. (Uemura, paras. [0016], [0022] – [0023].)

A bottomed cylindrical cap 9 made of lead glass is attached to the front side of the envelope 1 through a gap 8, so as to surround the phosphor screen plate. The gap 8 is comprised of the gaps G12 and G2 shown in Figure 1. Uemura discloses at para. [0025] that,

“... A transparent cooling liquid 12 such as water is sealed in the gap 8. The cooling liquid 12 is sealed in the gap 8 by closing a portion between the inner surface of the tip of a cylindrical portion 9-2 of the cap 9 and the outer surface of the glass bulb 1-1 with a silicone adhesive 11 in a ring-like shape.” [emphasis added]

Paragraph [0040], which the Examiner has referred to in connection with the limitations of claim 55, relates to a second embodiment shown in Figure 4 of Uemura, in which a longer cap 19 has been substituted for the cap 9 shown in Figure 1. More particularly, para. [0040] states,

“[0040] The cooling liquid 12 is sealed by a sealing member (stem) 13 made of an insulating material such as silicone rubber. The outer diameter of the sealing member 13 is slightly larger than that of the envelope 1. When the cooling liquid 12 is sealed with insulating silicone rubber, the light source tube and the cap 19 can be fixed to each other without adversely affecting the outer shape of the cap 19 (shield glass tube) that covers the envelope 1 of the light source tube, and the cooling liquid 12 can be sealed in the gap between the envelope 1 of the light source tube and the cap 19.” [emphasis added]

Two paragraphs prior to the above passage, Uemura states in para. [0038] that,

“[0038] The cooling mechanism is made up from the gap 8 formed between the envelope 1 and cap 19, and a cooling liquid 12, e.g., oil, sealed in the gap 8. ...”

Paras. [0029], [0030], [0034], [0042] and [0045] also refer to the cooling liquid being sealed in the gap. (See also para. [0031] which contemplates a non-sealed embodiment and which states that “In this case, the phosphor screen 2 is cooled not by water but by air”.)

Thus, reference numeral 8 of Uemura does not denote an electrically insulated flow generator as suggested by the Examiner. Rather, reference numeral 8 denotes a gap, in which a cooling liquid 12 is sealed, by an insulating material such as silicone rubber. Uemura fails to disclose or suggest any circulation of the cooling liquid sealed by the insulating material. More particularly, Uemura fails to disclose or suggest any flow generator whatsoever to cause the cooling liquid to flow in the gap. Therefore, Uemura also fails to disclose or suggest, “an electrically insulated flow generator configured to generate a flow of liquid along an inside surface of an envelope”, as recited in independent claim 55.

Accordingly, both Nodwell and Uemura fail to disclose or suggest, “an electrically insulated flow generator configured to generate a flow of liquid along an inside surface of an envelope”, as recited in independent claim 55. Therefore, the Nodwell and Uemura references fail to teach or suggest all of the claim limitations. Thus, the Nodwell and Uemura references fail to satisfy at least the third of the above-noted requirements for a *prima facie* case of obviousness of independent claim 55. Applicants therefore respectfully request that the rejection of independent claim 55 be withdrawn.

B) No Apparent Reason to Combine Reference Teachings

Although the foregoing is believed to be sufficient to overcome the rejection of independent claim 55 under 35 U.S.C. § 103(a), Applicants also respectfully

submit that the first of the above-noted requirements for a *prima facie* case of obviousness has not been satisfied, as there is no suggestion or motivation in the Nodwell or Uemura references to combine their teachings, nor is there any “apparent reason” to combine their teachings.

The requirement of an “apparent reason” to combine reference teachings was discussed by the United States Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ____ (2007). In *KSR*, although the Supreme Court rejected a “rigid application” of the teaching-suggestion-motivation test for obviousness, the Court nevertheless emphasized (at p.14) that a finding of obviousness requires an “apparent reason” to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit.”

In view of the Court’s comments in *KSR*, the United States Patent and Trademark Office has instructed its Technology Center Directors that,

“Therefore, in formulating a rejection under 35 U.S.C. § 103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed.”

(Internal USPTO Memorandum to Technology Center Directors, from Margaret A. Focarino, Deputy Commissioner for Patent Operations, dated May 3, 2007).

In the present Office Action, the Examiner has suggested that it would have been obvious to combine reference teachings “for the purpose of enhancing reliability of the apparatus”. However, the Examiner has not explained how modifying Nodwell’s apparatus to include any aspect of Uemura would improve its reliability. Applicants respectfully submit that there is simply no “apparent reason” to modify Nodwell to include the relevant elements drawn from Uemura.

As discussed above, the relevant elements from Uemura described in para. [0040] cited by the Examiner are the gap 8 between the envelope 1 and the cap 19 in Figure 4, sealed by the sealing member (stem) 13 made of an insulating material such as silicone rubber, to seal the cooling liquid 12 in the gap 8. The reasons Uemura provided these elements in the vacuum fluorescent display disclosed therein are to prevent overheating of the phosphor screen and to prevent X-ray leakage (see paras [0044]-[0045]).

Applicants respectfully submit that there would be no apparent reason to modify the Nodwell arc lamp apparatus to include these elements of Uemura's vacuum fluorescent display. Nodwell discloses a high intensity arc lamp in which a liquid such as water is circulated through the arc chamber with a tangential velocity so as to form a vortexing liquid wall along an inside surface of an arc lamp envelope. In view of the significant cooling provided by this vortexing liquid wall, there does not appear to be any apparent reason whatsoever to require any further cooling in Nodwell. Similarly, the desire to prevent X-ray leakage from a vacuum fluorescent display such as Uemura's is inapplicable to the DC arc lamp disclosed by Nodwell. Thus, neither of the reasons that led Uemura to provide the relevant elements would apply to the DC arc lamp disclosed by Nodwell.

With respect to the reason of enhanced reliability suggested by the Examiner, there is nothing to suggest that modifying Nodwell's arc lamp to include the cap 19 and sealing stem 13 defining the gap 8 of Uemura would in any way improve the reliability of the Nodwell arc lamp. If anything, these elements of Uemura would be entirely unnecessary and may in fact interfere with the proper functioning of the Nodwell arc lamp.

Thus, there is no "apparent reason" to modify Nodwell to include elements drawn from Uemura. Accordingly, the Nodwell and Uemura references also fail to satisfy the first of the above-noted requirements for a *prima facie* case

of obviousness. For this additional reason, Applicants respectfully request that the rejection of independent claim 55 be withdrawn.

C) Claims 56-63, 66, 69, 70, 75, 115 and 116

Claims 56-63, 66, 69, 70 and 75 are directly or indirectly or indirectly dependent upon independent claim 55. Applicants therefore respectfully submit that these claims are allowable due to their dependencies, as well as the additional subject-matter that each of these claims recites.

Independent claims 115 and 116 recite limitations similar to those discussed above in connection with claim 55. Applicants therefore respectfully submit that the Nodwell and Uemura references fail to satisfy the above-noted requirements for *prima facie* case of obviousness of claims 115 and 116, for either or both of the reasons discussed above in connection with claim 55.

35 U.S.C. § 103(a): Claims 64, 65, 67, 68, 71-74

The Examiner has rejected claims 64, 65, 71 and 72 under 35 U.S.C. § 103(a) as being unpatentable over Nodwell, Uemura and U.S. Patent No. 6,621,199 to Parfeniuk et al. ("Parfeniuk"). The Examiner has further rejected claims 67 and 68 as being unpatentable over Nodwell, Uemura and U.S. Patent No. 5,753,106 to Schenck. The Examiner has further rejected claim 73 as being unpatentable over Nodwell, Uemura, Parfeniuk and U.S. Patent No. 5,137,659 to Ashley. The Examiner has further rejected claim 74 as being unpatentable over Nodwell, Uemura, Parfeniuk and U.S. Patent No. 6,465,799 to Kimble.

Claims 64, 65, 67, 68 and 71-74 are directly or indirectly dependent upon claim 55, which has been shown to be allowable earlier herein. Applicants therefore respectfully submit that claims 64, 65, 67, 68 and 71-74 are allowable due to their dependencies, as well as the additional subject-matter that each of these claims recites.

Election / Restrictions: Request for Rejoinder of claims 76-114 and 117-131

Rejoinder of claims 76-114 and 117-131, which are presently pending but withdrawn from consideration, is respectfully requested pursuant to 37 C.F.R. § 1.141.

In this regard, claims 76-114 and 117-119 are directly or indirectly dependent upon independent claim 55, while claims 120-131 are directly or indirectly dependent upon independent claim 116.

Independent claims 55 and 116 are both generic to all relevant alleged species identified by the Examiner to which their dependent claims 56-114 and 117-131 pertain, and therefore, claims 55 and 116 are both linking claims as discussed in M.P.E.P. § 809.03. As independent claims 55 and 116 have been shown to be allowable, applicants respectfully request that their dependent claims 76-114 and 117-131 be rejoined in this application and allowed, pursuant to 37 C.F.R. § 1.141.

Notification of Copending Application

Applicants wish to take this opportunity to draw the Examiner's attention to the existence of commonly owned copending application no. 10/979,447, which has been allowed. Its official patent application publication no. US 2005/0062388 was included in the Information Disclosure Statement dated May 26, 2006 in connection with the present application. Applicants respectfully invite the Examiner to monitor the status of application no. 10/979,447, in the event that the Examiner may view its allowance or any other event during its prosecution as relevant to the present application.

Conclusion

In view of the foregoing, applicants respectfully submit that the present application is in condition for allowance, and respectfully request that a Notice of Allowance be issued.

Should there be any questions concerning this application, the Examiner is respectfully invited to contact the undersigned agent at the telephone number appearing below. Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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